

What Is Claimed Is:

1. A method for performing multi-hop peer-to-peer telecommunications on a wireless network, which includes a plurality of radio terminals, and topology of which changes moment by moment and, comprising the steps in which:
  - 5 each radio terminal exchanges the link state with radio terminals capable of direct communications (said link state including only information on radio terminals within a predetermined number of hops), and constructs a routing table;
  - 10 a packet is prepared including a routing stack for storing intermediate routing information therefor whenever the packet passes through the terminals;
  - 15 a sender terminal designates a destination terminal to broadcast said packet;
  - the radio terminals on the route, which receive said packet, write the intermediate routing information to said routing stack while transferring said packet to all radio terminals based on said routing table;
  - 20 the destination terminal which receives said packet returns said packet to said sender terminal through the route followed by said packet based on information in said routing stack; and
  - 25 said sender terminal which receives said packet unicasts a message to said destination terminal through the radio terminals on said route based on information in said routing stack included in said packet.
2. The method for performing multi-hop peer-to-peer telecommunications according to Claim 1, wherein said intermediate routing information includes the link ID and/or Identity showing the route; and said link ID and/or Identity is uniform among terminals which can communicate directly, but is not globally uniform.
- 35 3. The method for performing multi-hop peer-to-peer telecommunications according to Claim 2 wherein a specific number and/or symbol is reserved as said link ID and/or Identity showing that

said routing stack is empty.

4. The method for performing multi-hop peer-to-peer telecommunications according to Claim 1, wherein said destination terminal and/or said radio terminal in the route discovers that the link with the transfer partner included in said routing stack is cut in the route wherein said packet is returned to said sender terminal, at which time said destination terminal and/or said radio terminal reconstructs said routing stack.

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5. A telecommunications method for radio terminals, constituting a wireless network, and comprising:

15 a routing table generating step, wherein the link state is exchanged with radio terminals capable of direct communication (said link state including only information on radio terminals within a predetermined number of hops), and a routing table is constructed;

20 a transfer step wherein said packet is transferred to the prescribed terminal when the received packet is not addressed to itself, based on the intermediate routing information in the routing stack included in said packet and the contents of said routing table;

25 a source routing demand packet transfer step wherein, when the received packet is a source routing demand packet and is broadcast, the intermediate routing information is written to said routing stack included in said packet while transferring said packet to all radio terminals based on said routing table; and

30 a source routing demand packet return step wherein, when the received packet is a source routing demand packet and undergoes sendback unicast from the destination terminal to the sender terminal, said packet is transferred to the prescribed terminal based on the intermediate routing information in said routing stack included in said packet and the contents of said routing table.

35 6. The telecommunications method for radio terminals according to Claim 5, wherein said routing table generating step comprises the steps of:

extracting information on the terminals within the

predetermined hop range from a terminal's own routing table;  
sending the extracted link state relating to the terminal  
to the partner terminal;  
storing the link state received from said partner terminal  
5 to the terminal's own routing table; and  
repeating the above steps after the passage of a prescribed  
period of time.

7. The telecommunications method for radio terminals  
10 according to Claim 5, wherein said source routing demand packet  
transfer step comprises the steps of:  
        storing route information within said packet;  
        storing the local link ID and/or Identity of a terminal in  
        said routing stack;  
15         moving the pointer of said routing stack; and  
        sending said packet to each terminal that is capable of  
        direct communications.

8. The telecommunications method for radio terminals  
20 according to Claim 5, wherein said source routing demand packet  
transfer step comprises a step for stopping the transfer process when  
said routing stack is full.

9. The telecommunications method for radio terminals  
25 according to Claim 5, wherein said source routing demand packet return  
step comprises the steps of:  
        putting back the pointer of said routing stack;  
        retrieving the link ID and/or Identity from said routing  
        stack; and  
30         sending the packet to one terminal based on said link ID  
        and/or Identity.

10. The telecommunications method for radio terminals  
according to Claim 5, wherein said source routing demand packet return  
35 step includes a routing stack reconstruction step for reconstructing  
said routing stack when it is found that the link with the transfer

party included in said routing stack has been cut.

11. The telecommunications method for radio terminals according to Claim 10, wherein said routing stack reconstruction step 5 comprises the steps of:  
completely emptying said routing stack;  
obtaining identification information on the sender terminal from said packet to create a packet including this; and broadcasting the created packet.

10 12. The telecommunications method for radio terminals according to Claim 5, further comprising the steps of:  
generating a packet including identification information on the destination terminal;  
15 broadcasting the created packet;  
receiving a packet including said routing stack from said destination terminal; and  
unicasting a packet to the destination terminal based on said routing stack.

20 13. The telecommunications method for radio terminals according to Claim 5, further comprising the steps of:  
determining whether the received packet is a demand for source routing when said packet is addressed to the terminal itself;  
25 and  
unicasting said packet to the sender terminal based on said routing stack when said packet is a demand for source routing.

30 14. A medium for recording a program for causing a processor to carry out a telecommunications method for radio terminals constituting a wireless network, wherein the program recorded in the medium causes the execution of:  
35 a routing table generating step, wherein the link state is exchanged with radio terminals capable of direct communication (said link state including only information on radio terminals within a predetermined number of hops), and a routing table is constructed;

- a transfer step wherein said packet is transferred to the prescribed terminal based on the intermediate routing information in the routing stack included in said packet and the contents of said routing table, when the received packet is not addressed to itself;
- 5           a source routing demand packet transfer step wherein, when the received packet is a source routing demand packet and is broadcast, the intermediate routing information is written to said routing stack included in said packet, while transferring said packet to all radio terminals based on said routing table; and
- 10          a source routing demand packet return step wherein, when the received packet is a source routing demand packet and undergoes sendback unicast from the sender terminal to the sender terminal, said packet is transferred to the prescribed terminal based on the intermediate routing information in said routing stack included in
- 15         said packet and the contents of said routing table.